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## A Few Observations on the Control of Disease in Sheep.*


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We are rapidly passing through a period, a phase of which already has been successfully terminated, during which our attention as a profession has been and is being focused almost exclusively upon the welfare of our dairy herd. The high priority given to milk production rightly demands that this be so, although it seems a terrible thing that the need for the control of disease in dairy herds had to be brought home through the medium of the greatest catastrophe in the world's history. The demand has been such as to call forth an unprecedented advertisement of the part that the veterinarian plays in the welfare of dairy cattle. More striking still, perhaps, is the manner in which the profession has left its previous cloistered privacy to conduct a voluntary campaign and crusade among stock owners, with a real emphasis on preventive medicine.

During this period of intensive professional and official propaganda we have heard a still small voice crying in the wilderness in the form of two reports on hill sheep farming, one the result of a Government investigation, the other a professional memorandum. The Government appear to have realised in the present emergency not only the importance of the hill sheep but the vital part played by the hill farmer in human society. It has already recognised the former in a practical way in order to ensure the maintenance of our flocks in general, through the medium of its "hill sheep subsidy"—the present-day mainstay of many an upland holding. Now in Wales, where in 1939 we had between four and five million sheep, and where 9,575 flocks received official subsidy payment in 1940–41, it strikes me that the problem of the hill sheep farm is essentially a domestic one of premier importance. If we read through these two reports we cannot escape one very important conclusion. In each, attention is directed to the paramount importance of disease among hill flocks and the crippling effects this has upon the hill sheep farming industry.

If any justification were needed for addressing a Welsh Division of the N.V.M.A. on the subject chosen, I offer these facts for your consideration. My only authority for speaking is an association of 15 years with the problem.

The last 25 years have seen a most remarkable increase in our knowledge of sheep diseases, knowledge which has been contributed to by veterinary workers in this and other countries. The urgent need for a speedy solution to several pressing problems from time to time in the course of these years, however, has not given workers much opportunity, until relatively recently, for any really fundamental work in relation to the factors chiefly concerned with the maintenance of the health and productivity of sheep. It is hoped, however, that if certain of the recommendations contained in the Hill Sheep Committee's Report are implemented, work of this nature can proceed on a greater scale, for herein lies an enormous field awaiting harvesting. Despite this, much of the work already accomplished has been not only beneficial to farmers directly but has added something to the sum total of our knowledge of parasitology, bacteriology, pathology, immunity, biochemistry and therapeutics.

In an approach to a study of the maintenance of health in sheep, all of us must have been struck with and have constantly in mind the fact that sheep are perhaps the least domesticated of our domesticated animals. Consequently we have need to pay much closer attention very often to natural factors, *e.g.*, climate, soil, herbage, etc., than to, shall we say, the "artificial" factors conveniently summed up in the modern term "herd management" in connection with dairy cattle, for instance. The natural surroundings of sheep are the basis of their health whilst more often than not the artificial environment of cattle harbours the seeds of their destruction. Thus not only does weather, as an example, influence the well-being of sheep directly but also indirectly by influencing the activities of several of its parasitic and bacterial enemies or the availability of certain essential elements of nutrition in soil and herbage. I emphasise this closer proximity of sheep to nature advisedly, for it seems to me that our conception of disease control in sheep depends largely upon an appreciation of this fact. I emphasise also that our main approach to this subject of disease control is by way of prophylaxis and not directly by therapeutic means. Having these two points in mind, we might now approach some of the individual problems lying within our purview, which go to make up the complex subject of health in sheep, without at any time being too dogmatic, for as the years roll by one finds one often has to retract what one previously put forward as a statement of definite irrefutable fact.

There is perhaps no more appropriate place to commence than in the realm of the intricate problem arising from nutritional derangements. Pasture has to be available in the right quantity and be of the right quality, the second at least being often a variable factor. (With the return of ploughed acres to grass and the lessons being learned on grassland management, one can visualise quite a headache awaiting investigators in the none-too-distant future.) We have just passed through the lambing season and, associated with that time of year, two matters present themselves for consideration in relation to ewes. It seems fairly clear that nutritionally the most important period in the gestation of the ewe and developing foetus is the last six weeks before lambing. Even though there be a vast difference in the nutritional level of pregnant ewes up to this stage, this has little or no influence either on the health of the ewe or the growth development of its foetus. In the last six weeks of gestation, however, the story is different and should there be a sudden drastic fall in the nutritional level from a rich diet and particularly if there be a twin pregnancy, it is probable that the flock owner will have on his hands a number of cases, possibly fatal cases of so-called pregnancy toxaemia or snow fever (clefyd yr eira or pen syndod). It is not uncommon, therefore, to meet with outbreaks of this condition in hard winters of sudden snow or severe frost, cutting available grazing to a minimum, particularly in ewes which were previously in good bodily condition. The severity of the symptoms will depend upon (1) the level of nutrition in the previous months, (2) the degree of deprivation, (3) the suddenness of deprivation and (4) whether there be a single or multiple pregnancy. Thus if the previous level was high, the deprivation sudden and severe or complete with a twin pregnancy, the incidence and severity of the symptoms will be sudden and marked. On the other hand, if the original level of nutrition was low and constant, even though the deprivation be acute and marked, and the pregnancy is single, symptoms will be few, but many ewes if examined might show an acetonaemia. Thus we can advise farmers that the gradual "steaming up" of pregnant ewes, particularly in the last six weeks, is essential under weather conditions liable to precipitate those conditions conducive to the development of pregnancy toxaemia. Ewes should not be too fat at tupping time and the demands of the developing foetus (or foetuses) must be met by at least maintaining, but preferably increasing, the nutritional level as the termination of gestation approaches. Associated clinically and in other ways with pregnancy toxaemia is a condition referred to as lambing sickness or grass tetany—a form of a suddenly developed hypocalcaemia and/or hypomagnesaemia akin to milk fever in the cow. An open winter with plenty of good quality early bite and a flush of milk are the almost certain precursors of lambing sickness. Normally, lambing sickness follows on after lambing, but not infrequently cases, wrongly diagnosed as pregnancy toxaemia, have been shown later to be cases of this condition occurring before lambing, nearly always in the last week. The confusion in diagnosis is quite understandable since the symptoms are very alike but for an absence of persistent grinding of the teeth, which, when taken with other symptoms, is almost diagnostic of pregnancy toxaemia—hence the claims for the successful treatment of pregnancy toxaemia with calcium. The danger of the development of lambing sickness is not to be so readily foreseen by the farmer. He can be advised, however, not to turn his lambed ewes on to too lush a pasture but if possible to alternate good with poorer. Although there are really no sound preventive steps that one can advise here, since the true aetiology of lambing sickness is known therapy is readily available—calcium combined, I would suggest, with magnesium and glucose. We have no reason to suppose that we are dealing in such cases with a calcium or magnesium deficiency of soil or herbage as such but, as is the case in milk fever, that the physiological balance of these elements in the blood is suddenly upset.

Our increasing knowledge of trace elements and the part they play in animal nutrition indicates that a soil or herbage deficiency of at least one of these elements plays an exceedingly important part in the normal development of the lamb foetus. It has been shown conclusively, both in this country and in Australia where the story

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is more complete, that if the *copper* content of the blood of the pregnant ewe showed a fall, particularly during the critical period referred to, of from 0·05 mg. per cent. to 0·01 mg. per cent., the central nervous system of the developing foetus will be grossly impaired or become degenerate and that at birth or soon afterwards it will show those symptoms typical of a motor paralysis to which we give the name swayback or dindro. Whilst in Australia this condition has been shown to develop on copper deficient pastures this does not appear to be the case in this country. As far as I am aware, although without exception there is a deficiency of circulating copper in the ewe giving birth to a swayback lamb, pasture analysis indicates there to be present an adequate amount of copper. Since the treatment of pregnant ewes in such flocks with copper prevents the development of swayback—adding further proof of the connection of copper with its development—it is interesting to conjecture how the deficiency arises. Here is a fruitful field of research for the biochemist.

The importance of copper in the nutrition of the pregnant ewe led us to investigate the part played by other trace elements in this connection. It is conceivable that cobalt and iron likewise play an important role in the development of the foetus and even in the ultimate thriving of the lamb after birth. Work in this direction is still continuing but the results suggest that they might be very interesting by improving the virility of the lamb, the nature of the wool and even the speed of parturition. Taking the nutrition of the pregnant ewe into consideration, therefore, there is every reason to advocate the need for careful attention by the flock master, and for the supplementing of the pasture with licks containing the essential trace elements copper, cobalt and iron. (In this connection it is worth while remarking that as it takes sheep some time to get acquainted with licks, it is desirable to introduce licks soon after tupping and to protect these from the weather.)

The mention of cobalt brings to mind the part played by this element in the thriving of lambs and its association with pining. We have yet to find any defined area in North Wales in which pining, as known in the Northern counties and in Scotland, exists, but there seems little doubt that several pastures, even reseeded pastures, lack this essential element, possibly also copper in an assimilable form. We have shown very conclusively the benefits which can be derived by the dosing of lambs with a mixture of trace elements. We have yet to show whether or not any advantage is gained *in utero* from the feeding of trace elements which is evident later in life. There appears to be a threshold in the nutrition of sheep. On the one side of this threshold we have degrees of general and specific deficiency reaching a climax in manifestations of nutritional ill health—swayback or pining. On the other side we encounter the vast field of parasitism ending in the clinically self-evident parasitic gastritis and enteritis. This threshold lies between the two extremes so that, provided the nutrition is fully adequate, intestinal parasites may be present even in large numbers without causing any detectable signs of ill health, but failing this even small numbers of parasites may be capable of causing symptoms of clinical ill health. This latter field is adequately covered by the term " sub-clinical parasitic gastritis " and it is obvious that its control lies principally in the domain of nutrition, the provision of the right quantity and quality of pasture. The fashion to-day is to think in terms of reseeded pasture but I may be permitted to issue a word of warning here to those who hold the general belief that the reseeded pasture is the solution to our problem of parasitism. I always have in mind that the greater the number of animals grazing a given area, the greater the danger of serious trouble from parasitism, be it intestinal or lung. Now the essential value of reseeded pasture is its food value and consequent carrying capacity and whilst the former quality has everything to recommend it, it is in relation to its second quality that the danger lies. The resistant nature of parasitic larvae permits of the building up of vast reserves of infection on such pastures which unless taken note of may end disastrously. Grazed judiciously, however, we can consider the reseeded pasture one of our armaments in the control of sub-clinical parasitism—probably one of the most costly scourges of sheep. In line, too, with our policy of preventive medicine one cannot fail to mention in passing the value of periodic dosing, of lambs in particular and ewes where possible, with a reliable anthelmintic.

The term parasite has now come to have a singularly narrow meaning. If one had only nematode parasites with which to contend our problem of sheep disease control might well prove flourishing. To be old-fashioned for a moment and regard the term parasite in its broader and truer sense, we realise that the sheep unfortunately is prey to many parasites, a fact brought home very vividly from time to time to V.I.s when the call comes to round up for scab investigations. Far be it from me to-day to enter into a discussion on this parasite, but there are two other ecto-parasites of sheep which need mentioning. To my mind one of the most revolting sights which a shepherd has to face is a maggoty sheep. Strangely enough, no reference is made in the N.V.M.A. Report on Hill Sheep Farming to sheep blowfly in its assessment of the financial losses due to specific diseases of sheep. Can we seriously overlook the financial loss due to sheep blowfly? I am very certain we cannot. Taking the country generally, the man hours lost in cleaning and dressing blown sheep, the loss of condition, and direct loss due to death must really be enormous. Much work has been done on this condition both in this and other countries. Two things seem essential to the control of maggot fly attack: (1) a dressing for " blown " sheep which has the threefold action of killing maggots, healing wounds and preventing further attacks; (2) the provision of a dip capable of either killing flies over a protracted period or of deterring flies for periods long enough to make it economical of time and labour and cost to dip sheep periodically throughout one of the busiest seasons of the year. I believe we have an almost complete answer to the first requirement in a preparation made by the late Dr. Hobson working for the A.R.C. at Bangor. The second requirement I am hopeful will be found in the recent preparations, *e.g.*, D.D.T., 666 or Gammexane, incorporated in sheep dips. We seem then to have reason for hope in the control of an exceedingly important parasitic enemy of sheep.

Those of you who have handled sheep in any numbers must at some time or another have taken visitors home with you in the form of keds (*Melophagus ovis*). Strangely enough, these parasites, which cause the sheep considerable uneasiness when present on the skin in great numbers, are often mistaken for ticks (*Ixodes ricinus*). This parasite does not confine its attention only to sheep as we well know, his blood sucking qualities causing serious trouble in cattle also by way of redwater (piroplasmosis). The tick is generally present in certain areas, fairly well defined, and is in residence here because the nature of the land is conducive to its well-being. No estimate has been made of the direct or indirect loss due to the abstraction of blood from sheep. It would be interesting to know, for I recall shaking off 3,000 odd ticks from the skin of a young lamb on one occasion. In Scotland and Northern England, the tick is responsible for serious losses in sheep from louping ill. So far as my knowledge goes, I have no reason to suppose that this condition is present in Wales. There seems nothing but good fortune to explain its absence, however. The tick in Wales is mainly concerned with the causation of staphylococcal pyaemia which can reach very serious proportions on certain sheep walks. This condition, affecting only lambs, might at first be mistaken for joint ill or navel ill, a few cases of which we also meet with where lambing conditions are dirty. The control of the tick, then, is urgently called for and derris or a parallel preparation shows signs of being helpful in this direction. The dusting of lambs with derris before turning them on to tick-infested land, and repeating this in three weeks' time, seems to deter large enough numbers of ticks for sufficiently long to allow the lamb by natural means to overcome any staphylococcal invasion through the skin. This does not mean, however, that the wider problem of tick control is settled.

Since the discovery of carbon tetrachloride in the control of fluke, there has been a tendency to regard the problem of fluke infestation as written off and completed. Every now and again, however, the problem reappears. This last winter, for instance, we investigated several outbreaks of fairly sudden deaths in ewes which proved to be what we might term " acute " fluke. I refer to the subject because in such cases it is rather difficult to offer advice. The " pill," as we know it, consisting of 1, 2 or 5 c.c. of carbon tetrachloride, is of no value in such cases. Young flukes under four to six weeks of age are not killed by even 5 c.c. of carbon tetrachloride and in " acute " fluke one is dealing more often than not with deaths in ewes caused by flukes only four to five weeks old. The nine stitches now needed might have been avoided by the prompt use of one stitch at the right time in the form of regular dosing with 1 c.c. Drastic action is called for and after warning the farmers concerned of the serious consequences, on the one hand, of the proposed treatment or of the leaving of the sheep untreated on the other, 10 c.c. of carbon tetrachloride were given on each of two consecutive days. Fortunately, with the exception of a very few that died of the disease despite treatment, no more losses were sustained. Herein lies a lesson. As we all know there is only *one* recognised intermediate host available for *Distomum hepaticum* in this country—the fresh water snail, *Limnea truncatula*—but there are at least three primary or major hosts only one of which do we seriously consider to demand regular preventive dosing. There is no need to labour the point of the serious loss in cattle and cattle products alone, to indicate the need for a determined effort to eradicate the less spectacular host—the snail—by means of efficient ditching, draining and where necessary copper sulphate dressing of land.

All of us can recall the text-book description and pictures of gid in sheep and the life history of the tapeworm concerned. This recollection is so well marked as to have painted a picture of gid which it comes as a shock to realise is only one form this condition may take. During an investigation of a condition or probably a series of conditions going under the Welsh name breid, we discovered at least one to be a form of gid not so typical of the text-book description. Affected sheep walk with their heads held high, they appear excited, run into obstacles, progress at an angle or show a partial posterior paralysis not unlike swayback. Examination has shown

the presence of the coenural cyst in various places in the brain and cord. Experienced shepherds well acquainted with gid or bendro, failed to associate these symptoms with that disease. There has been an apparent increase in cases of gid in its widest sense in the last few years and this has coincided to some extent with an increase in the number of foxes, and one is prompted to speculate whether there may be a connection here.

The association between weather conditions and pasture with disease can be taken a step further. We have long since associated liming and artificial manuring of pastures followed by good growing weather with a spate of losses in lambs and ewes from enterotoxaemia which can attack sheep at any age from about two days upwards. This fact often leads to a mistaken diagnosis of lamb dysentery in young lambs and of braxy in yearlings in autumn. A reduction of losses from enterotoxaemia in sheep by means of proper management is not unknown and although there be specific prophylactic measures available, management should not be entirely disregarded. Too rich a pasture is potentially dangerous but sheep can be grazed on such pasture, provided they have not come off very poor land immediately previously, without the danger of losses occurring. The old method of docking lambs has also much to recommend it as a preventive practice. Our knowledge of these enterotoxaemias is so well advanced —though not complete, as certain serum failures go to prove— that we can reliably recommend specific prophylactic treatment which will enable the farmer to graze his sheep so as to get the maximum and speediest growth without fear of losses. The anaerobic diseases cannot be left without a word regarding braxy, a cause of sudden death in yearling sheep, happening as it so often does in Wales when lambs are away from the homestead in their winter quarters. True braxy, by the way, is being confused lately with the appearance of a form of *Cl. chauvoei* infection causing equally unheralded deaths without blackleg lesions, and the undoubted value of braxy vaccine is thereby falling into undeserved disrepute.

As it is the time of year when we meet with it, I would just mention, in passing, the danger which may follow just now in gathering sheep too frequently. This practice predisposes to the development of a contagious pneumonia likely to have a high incidence of mortality, and heralded by running noses, coughing and general malaise. The introduction of such a ewe into a healthy flock may at times be sufficient to set off an outbreak, provided contact is close as when ewes are folded. Avoidance of all unnecessary gathering of sheep at this time of year is a good maxim.

It is said that a good shepherd never has foot rot in his flock. If this be true then it seems that there are very many poor shepherds about. The infectious nature of this condition in its commonest manifestation is confirmed and recent Australian work indicates that infection dies out of pasture land in about 7 to 14 days, leaving the pasture safe for healthy sheep to return to. The flock should be carefully examined before being turned on to such a pasture and preferably walked through a foot bath of copper sulphate. Such a practice has been found to work well.

It seems clear that by dint of rigorous attention to flock management and the use of proven specific prophylactics, we can vastly improve the health of the sheep and very considerably reduce mortality from disease. Since sheep farming forms a considerable proportion of our livestock industry in Wales, you will excuse me if I make an urgent appeal to practitioners, in particular, to take an active interest in sheep problems. The keynote to the control of disease is diagnosis, since upon diagnosis depends the successful use of specific prophylactic measures. Diagnosis is the art of the clinician and not of the farmer, the patent medicine vendor or the village chemist, all of whom are particularly active in this direction. Diagnosis demands a close collaboration between field and laboratory worker, since laboratory diagnosis is merely an extension of clinical diagnosis and not something distinct and apart. The call for laboratory diagnosis increases daily and is very evident in connection with sheep disease control, and I feel sure that there exists in this area the co-operation to which I refer as between the field and the laboratory, for on it is based the ultimate control of disease in general.

We have come a long way in the last 25 years, but we still have a long way to go. The farmer must be made aware of our existing knowledge, for knowledge is not private property. Knowledge is progress. It is important that the farmer acquires this knowledge from the veterinarian and not second hand through some other channel. He must be made to feel that only the veterinarian is capable of giving him the advice he needs. The practitioner's opportunity for imparting knowledge is unique, and every opportunity during daily contacts should be grasped and advantage taken of it. As a direct result of the education of the farmer in this way, and only then, can the practitioner rightfully expect his intelligent co-operation in what must be after all a joint effort in disease control.

### Discussion

Mr. R. W. Hall: He was sure that every member present had heard the address given by Mr. Rowlands with great interest; it had been most instructive. Most of them who had occasional contact with sheep diseases would appreciate all that had been said, and all the advice given. He would now throw the meeting open for discussion.

Captain W. Davies: They all felt very grateful to the speaker for his instructive address. He had been a practitioner for a number of years, but had little to do with sheep. There was, however, one condition which caused some difficulty. He referred to blindness in sheep in the autumn when the weather was warm, but the nights cold; two or three sheep went blind and in a few days the whole flock became affected.

Mr. Rowlands: He thanked the previous speakers for their kind remarks. With regard to Captain Davies' question, there were several possible causes. There was an infectious type caused by a virus-like organism which was very serious and could run through a flock of 100 ewes inside two days. He thought that Captain Davies' case was more likely caused by sheep passing through bracken and receiving the spores in their eyes; this type responded to treatment.

Mr. Bryson said he would like to ask Mr. Rowlands about a narcotic condition of the muzzle and lips and also the feet which was often met with in sheep grazing on "stubble." What was the best treatment?

Mr. Rowlands: This was a frequent occurrence amongst sheep. There was a specific condition due to a virus which spread very quickly; the more common type, however, where only a few sheep showed symptoms, was due to ground infection from stubble caused by necrophorus, actinobacillus, and often staphylococcus. Treatment of the infectious type was only preventive by immunisation of lambs by vaccine, or of ewes before lambing. Local application was the only method for the non-infectious type.

Mr. J. C. Hill: He would like Mr. Rowlands' opinion on a small flock of 86 ewes grazed on hill land and which began to lamb in the severe snowstorms which occurred last February. The snow had been on for eight days after the lambs were born and the latter began to die off. The Veterinary Investigation Officer took up the case, during which time the deaths continued and no solution of the problem presented itself. The sheep had been confined to a small area of grazing which had been well limed. Some ewes died as well, and *post-mortem* examination findings were very varied, there being a little fluke present. There appeared to be sufficient milk for the lambs.

Mr. Rowlands: He agreed that it was a difficult problem and suggested a form of swayback brought on by the recent liming of the land, which would tend to bind certain elements, including copper.

Mr. Watson referred to severe ulceration of the lips and muzzle in sheep, extending to the mouth, tongue and coronets. The teats and vulva of ewes became affected also.

Mr. Rowlands thought probably the mouth lesions were caused by actinobacilli and the vulva and teat lesions by a virus.

Mr. Davies mentioned an eczematous condition of the feet without foot rot being present, causing some confusion in the differential diagnosis of foot-and-mouth disease.

Mr. Rowlands suggested that this was foot rot in the early stages.

Mr. R. W. Hall corroborated all Mr. Rowlands had said about pregnancy toxaemia and confirmed it with his own experiences; he always advised exercise during the last fortnight of pregnancy. Referring to swayback, he said that in his experience animals refused the "licks," and he therefore gave seven grains of copper sulphate after tupping and seven grains a month before lambing; this seemed very successful. He asked Mr. Rowlands to reveal his prescription for preventing maggots.

Mr. Rowlands: The dosing to which he had referred was as follows: 5 parts lysol, 4 parts carbon tetrachloride, 9 parts household paraffin, 2 parts pine tar oil: to be mixed 1 in 4 with water before applying.

## An Hereditary Defect of Newly-Born Lambs

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In a pedigree flock of Welsh mountain sheep in the spring of 1944, a number of lambs were born suffering from the condition described below, which rendered them completely helpless.

The following is a general account of the condition as it appears in the field. This is of importance as it draws attention to a condition which superficially resembles swayback, but only so far that animals are born which show a variety of paralysis and inco-ordination. At the moment we are not in a position to make any statement about the clinical type of inco-ordination, nor of the nature of the disease and its aetiology. This is being investigated further by Dr. J. R. M. Innes and Mr. H. Parry, of the Biological Department, I.C.I., and a publication concerning this will appear in due course.

### Description of the Condition

Clinically, affected lambs have all the appearance of suffering from acute swayback, the resemblance to this condition being particularly striking. (No cases of swayback have been detected in this pedigree flock, or in the flock of about 600 mountain ewes associated with it, during the last 30 years.) The appearance of the lambs might conveniently and aptly be described as "helpless." This is manifest by a lack of muscular co-ordination in all limbs—more marked at times in the fore and at others in the hind limbs. Such lambs are sometimes able to stand for short periods, after being lifted, and do so with their legs placed widely apart to maintain a balance. This is not maintained for long, and the lambs fall to the ground and may struggle, paddling inco-ordinately for some time in an attempt to gain an upright position. Some at least of the affected lambs are blind and deaf and do not respond to any of the external stimulae. Even though they be put on to their mothers they appear incapable of suckling. At *post-mortem* examination there is no evidence of any gross anatomical abnormality which might account for the muscular inco-ordination, neither was there present, in those cases

so far examined, any macroscopic evidence of the degenerative changes in the structure of the brain and cord, such as are associated with cases of typical acute swayback. Bacteriological examination of material taken from liver, spleen, bone marrow, heart blood, brain and cord have consistently given negative results. There was no evidence of a blood copper deficiency in cases examined.

The lambs concerned may all have been born alive, but some were found dead by the shepherd on his first morning round, possibly having been born late the previous evening, and having died from exposure during the night. The majority, however, survived for a few days, but were entirely dependent on the shepherd's attention for securing milk.

Little notice was taken of the first one or two cases—they were simply regarded as exceptionally weak lambs. When more appeared, however, alarm was felt, though it so happened that these coincided with the first appearance of lamb dysentery in this flock, and attention was diverted to dealing with the latter problem. Sufficient records were, however, kept to give the approximate number of lambs affected and, by good fortune, it so happened that two different rams had been used in this flock, so that—as will be seen—it was possible to establish the probability that the condition is hereditary.

In this flock, the sheep are all ear-marked by tattooed letters and numbers a few days after birth, so that full particulars of their breeding are available.

The defect appears to have been introduced with a ram, which we may refer to as *A*, purchased in 1940. The lambs from this ram appeared to be so satisfactory that he was used for three years in the flock. As a result it happened that of the 45 ewes mated up in the autumn of 1943, about two-thirds were daughters of *A*, the remainder were daughters of other rams. Of the total flock, 13 were mated with a ram *B*, which was only distantly related to *A*; the remainder were mated up with a ram *C*, which was a son of *A*, and consequently ram *C* was mated with a number of his half-sisters. The results may be summarised as follows :—

Of 23 half-sisters of ram *C*, nine produced helpless lambs by *C*. None of the more distantly related ewes produced defective lambs when mated with *C*. Ram *B* produced no defective lambs at all, although mated with nine of the daughters of ram *A*.

For the reason given above, the exact number of defective lambs born cannot be given, but it was between nine and twelve; there is no doubt, however, about the accuracy of the above figures regarding the ewes. It is also quite certain that in more than one case a ewe carrying twins gave birth both to a perfectly normal lamb and to one showing the defect. It is also quite certain that in two or three cases an ewe gave birth to two "helpless" lambs.

The pedigree flock is mainly maintained in order to produce rams for use in the large mountain flock under the same ownership, and several of the sons of ram *A* have thus been used in the years 1942, 1943, 1944 and 1945. If the defect is due to a recessive gene, about half these rams would "carry" the defect, though, of course, not showing it, and it would only be when the daughters of such rams were mated with rams also "carrying" the defect, that there would be opportunities for it to produce helpless lambs. The rams are not used until they are 18 months old, and the ewes are also not mated until 18 months old, so that the first year in which such lambs could be expected would be 1945. Actually, four affected lambs were born in that year.

In the autumn of 1944, ram *C* was mated with six ewe lambs, his own daughters, in the hope of securing a few "helpless" lambs for more detailed examination in the spring of 1945. Unfortunately two of the ewes proved to be barren, and the remainder produced single lambs, all perfectly normal. Such a result is not surprising in view of the small number concerned and the fact that if, as is suspected, the defect is due to a single recessive gene, only one lamb in eight of those so bred would be likely to show the defect.

### Discussion

No similar case has ever been experienced (or at least noticed) in the flock, which has been under the same management and the same shepherd for more than 30 years, and we have not heard of any identical occurrence in this country, although Harbour (in private communication) describes a condition clinically resembling it in Scotland. By a coincidence, however, we received last year a private communication from Dr. Rasmussen, of the Dominion Department of Agriculture Experiment Station, Lethbridge, Alberta, Canada, describing what appears to be a very similar condition in the inbred part of a flock of Corriedale sheep at the Station, of which he has charge.

The specially interesting points of this occurrence are :—

(1) The apparent superficial resemblance to swayback.

(2) The fact that it appears to be very similar to the condition which has occurred in the Corriedale sheep in Canada. This suggests that the condition may exist in many other sheep in different parts of the world, though it would only be brought to light by close inbreeding. It is also likely that one or two cases might occur in any flock without suspicion being aroused that they were anything more than lambs which, by malnutrition or premature birth, were too weak to stand up and suck.

It is obviously desirable that as complete an investigation as possible of the condition should be made. With this in view ram *C* has been kept, and it is hoped that he will be mated up with a greater number of his own daughters in the coming year.

*Acknowledgment.*—We desire to thank Dr. Innes and Mr. H. Parry for the helpful interest they have shown in this matter and for their promise of co-operation in future work.

## CLINICAL COMMUNICATION

# Fracture of the Second Phalanx (Os Corona) in a Horse, due to Enemy Action

JALAL-UD-DIN SHUJA, B.SC.

Final Year Student, Royal Veterinary College

The case is thought worth recording because of its interesting history and comparative rarity.

*Subject.*—Heavy type bay gelding.

*History.*—During the early part of this year some stables in the London area were severely damaged by a V.1 bomb, causing several fatal casualties among the horses. The incident was reported at midnight and the premises were visited subsequently. The horse in question was found severely lame in the near hind leg, and the only injury visible at that time of night was a small punctured wound (as if made with a horse-shoe nail) on the coronet of this foot, and from which a small amount of blood had oozed and coagulated on the hoof. The patient was removed elsewhere, the wound cleansed and dressed.

Next day the horse was examined again. There was some reaction, exudation of synovial fluid, no crepitus though the horse resisted palpation owing to severe pain. Evidence of fracture being lacking, it was thought that a sharp object (shrapnel) had punctured the corono-pedal joint. The wound was dressed and the horse kept for further examination and observation.

At the next examination, two days later, there were signs of suppuration. Prognosis being grave, the horse was destroyed.

*Post-mortem Examination.*—The *post-mortem* examination of the foot revealed compound fracture of the second phalanx (complete split at the long axis with sharp oblique fracture of its medial condyle). No foreign body was recovered from the foot.

*Diagnosis.*—The smallness of the wound and the apparent absence of crepitus masked the correct *ante-mortem* diagnosis. To quote *Wooldridge's Encyclopaedia* Vol. 2: ". . . this bone being partly within the hoof the fracture is more difficult of diagnosis," and Dollar's *Veterinary Surgery*: ". . . direct violence is the cause in exceptional instances, for example, a heavy cart wheel passing over the coronet, fracturing the os corona or os pedis . . . the accident occurs in fore and hind limbs, but more frequently in the former. When displacement is present, mobility and crepitus are easily recognised, especially in the first phalanx. They are not always so apparent in the second phalanx, and in the os pedis they cannot be detected."

On *post-mortem* examination the fracture was thought to have been caused by a violent blow on the coronet of the affected foot by a sharp metallic object that was probably flung laterally from

(*Concluded at foot of Col.* 1, *page* 493)

## ABSTRACTS

**[The Veterinary Officer of Health.** Nelson, H. (1944.) *J. S. Afr. vet. med. Ass.* **15**. 125-136.]

This paper deals with the work of the veterinary officer in the sphere of public health and preventive medicine and the need for a post-graduate course in public health for veterinary officers.

The author, who is a Medical Officer of Health, in reviewing the position in the Union of South Africa, states there are 41 full-time and 82 part-time medical officers, whereas there are only eleven full-time and about six part-time veterinary officers in municipal employment. This he considers is inadequate representation of a highly scientific body of men whose training renders them eminently suited to this important work. The milk-borne diseases can only be controlled by a team of medical and veterinary officers and health inspectors. For this reason, early in the war the Defence Medical and Veterinary Departments together initiated a campaign for "safe milk." This included every aspect of production and distribution from the clinical examination of cows to the supervision of the delivery of the milk to the consumers. Pasteurisation plants were inspected and supervised. The programme had as its basis education and propaganda amongst producers and distributors and managers of pasteurising plants. Among the procedures adopted were bacterial counts of milk and the paper includes a rather lengthy comparison between Breed clump counts and plate counts—the latter gave the lower counts.

The same co-operative effort was brought to bear on the control of meat and meat products before delivery to the various camps. Wherever possible veterinary officers carried out *ante-* and *post-mortem* examinations of animals slaughtered for military use. In addition, public health education and propaganda were brought to a number of new areas in the Union, so much so that many public health improvements were effected in abattoir construction and butchers' shops throughout the country. In some places completely new and up-to-date abattoirs were erected under the guidance of veterinarians.

In public health departments the field of the veterinarian has been so far too limited. In most instances he is only employed at the abattoirs but he is also sometimes in charge of milk supplies. The veterinarian will always be the specialist on meat, meat products and dairying and will naturally be the only person who is in a position to deal with the clinical examination of animals. His scope should, however, extend beyond this and he should be able to take charge of the public health side of markets and marketing schemes and the control of many other perishable products. He should have an extensive knowledge of food values and dietetics and part of his work should be directed towards the general improvement of the breeding of animals for human food. The veterinarian with his basic knowledge of bacteriology, entomology and parasitology should not require much further study to equip himself to be the most suitable person to deal with the sources of infection of diseases such as malaria, plague, bilharzia, typhus, dengue, sleeping sickness and relapsing fever.

The writer looks hopefully to the future in anticipation of a greater veterinary participation in public health and he stresses the great importance or even the necessity for public health veterinarians to take a full post-graduate course on the lines of the medical Diploma of Public Health (such as the D.V.S.M. course, but also including parasitology and the control of insect-borne diseases). J. S. S.

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**[Experimental Reproduction of So-called Enterotoxaemia.** Britton, J. W., and Cameron, H. S. (1945.) *Cornell Vet.* **35**. 1-8.]

These authors have previously questioned the theory that so-called infectious enterotoxaemia (Bennetts) is a true enterotoxaemia arising from the elaboration and absorption of *Cl. welchii* toxin, type D, from the alimentary canal and in this paper they put forward further evidence in support of their view that the condition is a form of acute indigestion resulting from primary intestinal atony.

Enterotoxaemia, they state, is invariably associated with some change in the feeding. "The usual history is a two or three week feeding period on heavy grain rations, lush irrigated pasture or other soft feeds with inadequate roughage. Since the lambs affected are those in excellent condition abnormally large consumption is indicated. The roughage deficiency tends to reduce peristalsis and decrease rumination; hence one may logically assume that the intestine eventually becomes the site of primary atony."

The authors maintain that the condition resembles that of inhibitory ileus (paralytic ileus) in many, in which atony of a segment of the bowel prevents peristaltic movements and results in acute intestinal obstruction. This obstruction eventually leads to dehydration and shock with the familiar symptoms of collapse, coma and death. In the experience of the authors all the *post-mortem* lesions seen by them in cases of acute indigestion or enterotoxaemia in lambs could be explained on this basis.

One argument against the theory of toxin absorption is the difficulty in reproducing the disease by parenteral injections of toxins. In order to determine whether toxin could be absorbed from an atonic distended intestine, such as is found in field cases, laparotomies were performed on three lambs and a portion of jejunum 12 inches long was isolated by ligation. In one lamb, 50 c.c. of toxic culture filtrate was injected into the isolated loop, in the second lamb 50 c.c. of sterile water, and in the third lamb 50 c.c. of a 24 hour broth culture of *Cl. welchii*. None of the lambs showed any evidence of toxaemia due to absorption of the toxin. G. D.

the near side and, having struck the coronet, deviated in the opposite direction.

*Acknowledgment.*—The writer is deeply indebted to Mr. Gordon C. Knight, M.R.C.V.S., of the Beaumont Animals Hospital, N.W.1, and gratefully acknowledges his invaluable advice and help in the preparation of the photographs illustrating this and the previous communication.

## Questions and Answers

"Questions and Answers" will be published on alternate weeks.

The submission of questions for inclusion in this column will be welcomed; they can relate to any aspect of veterinary work. For purposes of record, each question is numbered, and those submitting questions are required to furnish (not for publication) name and address.

Answers to readers' queries represent exclusively the personal opinions of the writers, and criticism of the replies will be appreciated.

All communications should be addressed to the Editor.

### A Castration Query

**Q. CXVIII.**—*A yearling colt, said to have congenital inguinal hernia, is presented for castration. On visual and manual examination the animal appears normal. What technique would you advise for the operation?*

**A.**—As your correspondent cannot detect the hernia by visual or manual examination the writer presumes that the information or suspicion that congenital hernia exists comes from the owner, who may have observed something or may be depending upon the parental history. It is known that these herniae are often transmitted by the sire. Fortunately warning of the danger has been given. In the circumstances it is best to play for safety and in operating use the "covered operation" technique. There are several methods described in the text-books. Personally the writer prefers to use wooden clams.

### Running Sores on Belly of Cows

**Q. CXIX.**—*A condition, which is widespread around here, is a series of running sores along the belly of cows, from in front of the udder to the brisket. Can you suggest cause and treatment? On no cow is there any pock on the udder.*

**A.**—The condition with which the writer is familiar and about which the questioner appears to be asking is one in which running sores exuding serum are present along the abdomen of the cow or heifer, which resembles "pemphigus" of the human without the constitutional symptoms which are described in that condition. It appears to be a form of eczema and not contagious. It is met with in dry cows out at grass and heifers or in milking cows, and is not by any means confined to stall-fed animals. It is also seen affecting other parts of the skin—the back, withers and pectoral region—and is often subjected to "savaging" by the cow or heifer persistently licking the sore part.

Bacteriological examination from time to time has not indicated any specific infection, and in this connection it must be remembered that the sores are usually widespread and exuding freely, and badly contaminated by extraneous material adhering to them when first reported. It would appear to be one of those conditions in which investigation of the cause, if specific, has been neglected. In my experience a course of potassium iodide, cleansing the lesions and application of tinct. iodii fort. to the sores daily has proved most beneficial and gives the most rapid recovery.

In cases not responding readily to this treatment auto-inoculation with the patient's own blood—50 c.c. being taken from the jugular and inoculated intramuscularly immediately, repeated at two- to three-day intervals for three injections—is often followed by spectacular results.

The condition described is seen most frequently in the late spring and summer months in my own practice, when affected animals are grazing at pasture. There is a possibility of the condition being of an allergic nature and not primarily associated with bacterial infection, and it is my usual practice to prescribe a complete change of diet when and where possible as an adjunct to treatment. This is a condition in which clinical reports from those who meet the disease frequently would be of considerable interest and value.

A very similar condition, in which sores are seen on the portion

of the udder between the teats, is fairly commonly seen, especially in the winter and early spring. Their appearance is usually associated with poor hygiene and the bacterial agent immediately concerned is usually a staphylococcus.

Treatment consists of improving stable hygiene and stimulating the cow's resistance with staphylococcus toxoid, or non-specific agents such as colloidal manganese, yatren, omnadin, etc. Local treatment with acridine derivatives is also of value: entozon, euflavine, or acriflavine emulsion.

Should the condition appear in the summer months, fly repellants are indicated.

### Peculiar Case of a Jersey Cow

**Q. CXX.**—*I hope you will be able to help me over a peculiar case I have encountered. A four-year-old Jersey cow spends a great portion of the day trying to scratch the inside of her nostril. She makes use of small branches of trees or bushes and often breaks off twigs 12 inches long, which have to be removed from the nostril.*

*I have encountered this in two cows before, one of which was a Jersey and one a Shorthorn. The Jersey was cured by nasal douches with glycerine and thymol. A considerable time later the condition recurred and the owner had the cow destroyed at once. She was an old cow. The Shorthorn was sold and I lost track of her.*

**A.**—The most likely cause of the condition described in the above question would appear to be a polypus or neoplasm. The condition is by no means uncommon, but owing to the concealed site of the lesion, presents great difficulty in accurate diagnosis. Surgical interference, unless the lesions were low enough to be palpable, would present equal difficulty, but the present writer has had some success using 1 per cent. $CuSO_4$ solution applied by means of a swab.

It is possible that in the case described by the questioner where recovery took place, the symptoms were caused by the inhalation of some irritant fertiliser, *e.g.*, lime from the pasture.

### Haemolytic Staphylococci

**Q. CXXI.**—*What is the clinical significance of haemolytic staphylococci found on tonsil, vaginal or prepuce swabs from dogs showing periodical ill-health?*

**A.**—Pathogenic strains of staphylococci can very frequently be isolated in small numbers from the tonsil, vagina, prepuce and other sites of dogs which are perfectly healthy and hence they are of little significance when isolated in similar numbers from dogs showing periodic ill-health. The only time the writer would regard the presence of pathogenic staphylococci as of significance, is when they are obtained in plentiful culture and when the site from which they are isolated is pathological.

### Correspondence

(1) *Drying Off Quarter Affected with Suppurative Mastitis;*
(2) *"Mastitis" Milk and the Resazurin Test.*

Sir,—I would like to make the following observations on your replies to questions XCII and XCIII.

*Question XCII (Drying off of quarter affected with suppurative mastitis).*—In New Zealand, owing to the scarcity of veterinary surgeons and the shortage of the more recent chemo-therapeutical preparations, it is customary among the farmers who have ahimals suffering from this type of mastitis to dry off the affected quarters by the simple expedient of ceasing to milk the quarter in question. This rather drastic step does not appear to have any harmful effect on the health of the animal and in very many instances it would appear that in the subsequent lactation a useful amount of milk is obtained from the previously affected quarter. This after all is more or less what one would anticipate on theoretical grounds because the greater part of the lactating tissue is regenerated afresh for each lactation. On the whole this particular method of drying up the quarter appears to be more effective than attempts based upon the strong solutions of acriflavine, etc.

*Question XCIII ("Mastitis" milk and the resazurin test).*—I do not think that your answer to this question really deals with the question at all. In nearly all cases of sub-acute and in many cases of streptococcal mastitis there are present a sufficiently large number of leucocytes to give a very bad resazurin test even 24 hours after the sample has been taken. The question, however, asks what effect it would have were the milk from such a quarter placed into a churn of otherwise normal milk. The answer to this is emphatically—no effect whatsoever. This observation is borne out by noting that many herds in which there is a fairly high incidence of chronic mastitis and yet where the milking routine is excellent from the hygienic viewpoint invariably obtain a good resazurin index.

Yours faithfully,

Wallaceville Animal Research Station, Wellington, New Zealand. R. W. Roach.

## QUESTIONS IN PARLIAMENT

### National Advisory Service

Mr. Dye asked the Minister of Agriculture on what date he proposes that the National Agricultural Advisory Service shall operate and thus remove the present uncertainties in the minds of the staffs of war agricultural executive committees.

Mr. T. Williams: I hope to be in a position to make a statement shortly about salary scales and conditions in the new Agricultural Advisory Service. Owing to the length of time which will inevitably be entailed in the selection of candidates for a service of this size and importance, it will not be possible for me to establish the National Agricultural Advisory Service until October 1st, 1946.

### Foot-and-Mouth Disease Infection (Migrant Birds)

Mr. Turton asked the Minister of Agriculture whether the statement that the 1937-38 outbreaks of foot-and-mouth disease suggested strongly that migrant birds are mechanical carriers of infection, made by the Chief Veterinary Officer on May 4th, 1945, had previously been communicated to the veterinary profession.

Mr. T. Williams: Yes, Sir. The view that migratory birds were responsible for bringing infection to Great Britain from the Continent in the latter part of 1937 was given much prominence both in the national and the technical Press at that time.

Mr. Turton: Is the Minister aware that veterinary periodicals have stated that they had no knowledge of this fact until May 4th?

Mr. Williams: Perhaps that was merely an article written by an amateur.

### Bulls, Seizure (Right of Appeal)

Sir W. Smithers asked the Minister of Agriculture whether his attention has been called to the fact that on July 9th, 1945, an official of his Ministry supported by a superintendent of police, seized, without warning, two young bulls from the farm of Mr. C. W. R. Lockyer, Manor Farm, Frampton-on-Severn; under what regulation or Act of Parliament this action was taken; has Mr. Lockyer the right of appeal; and what action does he propose to take to avoid the recurrence of such procedure.

The Minister of Agriculture (Mr. Tom Williams): Yes, Sir. This action was taken under Sub-section (7) of Section 6 of the Improvement of Livestock (Licensing of Bulls) Act, 1931, after Mr. Lockyer had twice been convicted and fined for failure to comply with statutory notices to castrate or cause to be slaughtered the two bulls in question because of their unsuitability for service. The bulls were transferred to the Ministry of Food for slaughter, and their value, less expenses, has since been paid to Mr. Lockyer. Mr. Lockyer failed to exercise his right of appeal within the appropriate period against the refusal of a licence to use these bulls for service. I see no reason to propose any variation in a procedure which has been duly authorised by Parliament.

Sir W. Smithers: Without going into the question of guilt or anything else in this particular case, may I ask if it is the policy of the Ministry of Agriculture to allow a right of appeal to an independent tribunal in all cases of taking away property on a farm, or the farm itself?

Mr. Williams: I think I have already made it clear to the hon. Member that there was a right of appeal in this case, but that Mr. Lockyer failed to exercise his privilege.

Mr. De la Bere: Is the Minister aware that this case is on the border of my constituency and that I am quite able to deal with it?

### Insecticides

Lieut.-Colonel Corbett asked the Minister of Agriculture whether, in view of the deadly effect on all insects, including bees, he proposes to impose any restrictions upon the sale and use of the new insecticide D.D.T.

Mr. T. Williams: There is no direct evidence that gammexane and products containing D.D.T. are likely to have harmful effects in this country when used for agricultural purposes strictly in accordance with the directions of the manufacturers. Further research and experiment is being carried out, however, and if any danger is discovered in the use of these materials the appropriate action will be taken. I understand that the production of D.D.T. has not been decontrolled but that limited supplies have been released for the manufacture of insecticides for general sale. There has been no control over the production of gammexane.

### Colonial Annual Reports and Economic Survey (Re-issue)

Mr. Sorensen asked the Secretary of State for the Colonies what are his plans regarding the re-issue of annual reports on the Colonies and the annual Colonial Economic Survey.

Mr. George Hall: I intend that these reports should be resumed at the earliest practicable moment, but in view of present staffing diffi-

culties in the Colonies and in my Department I cannot yet say how soon this is likely to be.

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PUBLIC DEVELOPMENT CORPORATIONS (COLONIES)

Major WILKES asked the Secretary of State for the Colonies if there are any plans for raising the standard of living in the Colonies by the creation of public development corporations.

Mr. GEORGE HALL: It has been suggested to Colonial Governments that they should consider the use of public development corporations in the general task of promoting Colonial economic development. I am going further into the possibilities, but no precise plans have yet been made.

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COLONIAL HIGHER EDUCATION (REPORTS)

Major WILKES asked the Secretary of State for the Colonies what action his Department is proposing to take on the three Reports on Higher Education in the Colonies recently published.

Mr. GEORGE HALL: I have already commended to the favourable consideration of Colonial Governments and institutions of higher education the Report of the Commission on Higher Education in the Colonies together with the Report of the West Indies Committee of that Commission. I hope that I shall soon be able to announce the establishment of the Inter-University Council recommended by the Commission. Other parts of the Report are under close consideration. The West Indian Governments have been informed that if the Committee's recommendations for the establishment of a West Indian university are acceptable to them, I shall be prepared to give favourable consideration to a grant for this purpose under the Colonial Development and Welfare Act.

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VOCATIONAL TRAINING SCHEME (AGRICULTURE)

Mr. AYLES asked the Minister of Agriculture whether he is aware that persons who have suffered interruption in the following of their occupation through some form of war service are ineligible for agricultural training under the scheme announced on June 5th, 1945, by reason only of the fact that they can return to a former occupation; and whether he will review this position in order to encourage people to take up agricultural careers.

Mr. T. WILLIAMS: The general conditions of eligibility for agricultural training under the Government's Vocational Training Scheme for men and women released from war service are the same as for all other kinds of training provided under that Scheme. The relaxation of the conditions in favour of applicants for agricultural training is not considered practicable, as any such concession would inevitably lead to demands for similar treatment for persons desiring to train for other occupations. I am glad to say, however, that the Ministry of Labour and National Service, which is the Department responsible for determining eligibility in individual cases, applies a liberal standard in considering applications from persons wishing to take up agricultural training.

## CHANNEL ISLANDS HERDS

The States of Guernsey has decided to prohibit all export of heifers under ten months old (states the *Farmers' Weekly*) and agreed that only 100 milch cows and heifers, not more than six months in calf, could leave the Island before December 31st, 1945. That decision included the 15 cows and heifers which had already been exported since Liberation Day. The position will be reviewed in the early months of 1946. In the meantime 100 cows represent 5 per cent. of the Island's milch cow population.

Guernsey's milk production is expected to reach 16,000 gallons weekly at an early date, and her present need for the civil population amounts to 13,400 gallons weekly, but the numbers of returning evacuees indicate that the population figures will rise from 25,000 to 37,000 before the end of the current year.

The Lieutenant-Governor, referring to the rehabilitation of Alderney, stated that he hoped to establish a herd of 200 Guernsey cattle in that island within two years. He added that Alderney would be farmed with the help of the British Government.

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To the end of September 233 members had been enrolled at the insemination centre at Ilminster, representing 3,204 cows, and 82 calves have been born. If the Ministry agrees, a Guernsey bull will be added to the 12 bulls in use.

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WEEKLY WISDOM

*The Prime Minister of one of our great Dominions once told me that the great thing in politics is to avoid mistakes; certainly the best physician is the one who commits the fewest errors in diagnosis. The one who never forgets the distinction between what he knows and what he only thinks he knows will not go far wrong. A physician who loses his humility is no longer a safe guide.*—LORD MORAN, President of the Royal College of Physicians.

# NOTES AND NEWS

The Editor will be glad to receive items of professional interest for inclusion in these columns.

### Diary of Events

Nov. 5th.—Meeting of the Farmers' Club, Royal Empire Society, W.C.1, 2.30 p.m.
Nov. 6th.—R.C.V.S. Animal Management Examinations.
Nov. 7th.—Meeting of the North Midland Division, N.V.M.A., at Sheffield (Grand Hotel), 2.30 p.m.
Nov. 10th.—Meeting of the Biochemical Society, at the London School of Hygiene and Tropical Medicine, Keppel Street, W.C.1, 11.30 a.m.
Nov. 13th.—Autumn Meeting of the Eastern Counties Division, N.V.M.A., at Thetford (Guildhall), 2 p.m.
Nov. 14th.—Meeting of the Editorial Committee, N.V.M.A., at 36, Gordon Square, W.C.1, 2.30 p.m.
Nov. 14th.—Benjamin Ward Richardson Lecture on "The Economic and Public Health Advantages of Centralised Slaughtering," by W. Brennan deVine, M.C., F.R.C.V.S., D.V.S.M., Chief Veterinary Officer, Birmingham: Royal Sanitary Institute, 90, Buckingham Palace Road, S.W.1.
Nov. 17th.—Annual Meeting of the Society of Women Veterinary Surgeons, 69, Great Peter Street, Westminster, 2.15 p.m.
Nov. 17th.—Meeting of the Nutrition Society (English Group) at the London School of Hygiene and Tropical Medicine, Keppel Street, W.C.1, 11 a.m.
Nov. 30th.—Meeting of the Royal Counties Division, N.V.M.A., at Reading (Caversham Bridge Hotel), 2.30 p.m.
Dec. 4th.—R.C.V.S. Written Examinations.
Dec. 5th.—R.C.V.S. Written Examinations.

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### Colonial Veterinary Service

The Secretary of State for the Colonies (the Rt. Hon. George H. Hall, M.P.) and the Under-Secretary of State (Mr. A. Creech Jones, M.P.) received a deputation from the Association at the Colonial Office, Downing Street, London, S.W.1, on Wednesday, October 24th, 1945.

The Secretary of State was also supported by Sir George Gater, G.C.M.G., K.C.B., D.S.O. (Permanent Under-Secretary of State), Sir Charles Jeffries, K.C.M.G., O.B.E. (Assistant Under-Secretary of State of the Colonial Service Department), and Mr. John Smith, O.B.E., M.R.C.V.S., D.V.H. (Adviser on Animal Health).

The N.V.M.A. deputation consisted of the President (Mr. G. N. Gould, M.R.C.V.S.), the senior Vice-President (Professor Wm. C. Miller, M.R.C.V.S., F.R.S.E.), Dr. W. R. Wooldridge, M.SC., M.R.C.V.S. (Chairman of the Overseas Committee of the Association), Mr. W. W. Henderson, C.B.E., M.R.C.V.S., D.V.S.M. (VICT.) (late Director of Veterinary Services, Nigeria), and Dr. J. Carmichael, M.R.C.V.S., DIP.BACT. (LOND.) (late Senior Veterinary Research Officer, Uganda).

The deputation amplified the Memoranda on the Colonial Veterinary Service which the Association forwarded to the Colonial Office in August of this year.

A very full discussion took place in which the urgency for improving the salaries and status of officers of the Colonial Veterinary Service was emphasised.

At the end of the discussion the Secretary of State indicated that he had listened with every sympathy to the representations made and promised to acquaint the Association with his proposals in the very near future.

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### Artificial Insemination Centres

Arrangements have been made between the N.V.M.A. and

The Cambridge Centre for the Artificial Insemination of Dairy Cattle,

The Reading Centre for the Artificial Insemination of Dairy Cattle,

The Artificial Insemination Centre of the Hampshire Cattle Breeders' Society,

for facilities to be available for veterinary surgeons nominated as Founder Members of centres established by the Milk Marketing Board or as members of local committees of producer-organised centres to make themselves acquainted with the working details of organisation and administration of artificial insemination centres.

These arrangements have been effected through the Veterinary Officers and the Committee of Management directing the above

centres. Members desiring to take advantage of these arrangements should communicate with one of the following:—

Mr. L. E. Rowson, M.R.C.V.S., Artificial Insemination Centre, Huntingdon Road, Cambridge.

Mr. D. L. Stewart, M.R.C.V.S., The Reading A.I. Centre, N.I.R.D., Shinfield, Reading.

Mr. E. Conn, M.R.C.V.S., Artificial Insemination Centre, Grand Hunting Stables, Lyndhurst, Hants.

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### Vaccination with S.19 Against Contagious Abortion

Discussions have been taking place between the N.V.M.A. and the National Cattle Breeders' Association on the subject of the sale of pedigree stock at Breed Society sales carrying certificates of agglutination test and vaccination.

Pending the conclusion of these discussions, practitioners are recommended to take a blood sample for a pre-vaccinal agglutination test within 14 days of vaccination of all stock which may be submitted to Breed Society sales in the future.

They are also recommended to keep a record of the identity of the animal and the relevant dates of agglutination test and vaccination.

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## PERSONAL

*Births.*—Cotchin.—On October 24th, 1945, to Adelaide, wife of Ernest Cotchin, M.S.R.C.V.S., a brother for Margaret.

Flodin.—At Ngatea, Hauraki Plains, New Zealand, October 20th, 1945, to Adrienne (*née* Beers), wife of Peter M. Flodin, M.R.C.V.S., a daughter. Both well.

Lake.—At the Fairhaven Nursing Home, Ashby-de-la-Zouch, on October 20th, 1945, to Connie, wife of Derrick A. Lake, M.R.C.V.S., a baby sister for Valerie and Pamela.

Steele.—At Birmingham Maternity Hospital on September 16th, 1945, to Helen (*née* Wilson), wife of Thomas Steele, M.R.C.V.S., a son—Donald Hugh.

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## R.C.V.S. OBITUARY

Ducksbury, Charles Hedley, "Pangbourne," North Street, Calne, Wilts. Graduated Edinburgh, July 15th, 1921. Died October 23rd, 1945; aged 47 years.

Mr. Charles Hedley Ducksbury, M.R.C.V.S., D.V.S.M., passed away in a nursing home at Bath, and his death at a relatively early age will be widely regretted. He was the son of the late O. A. Ducksbury, M.R.C.V.S., of Lancaster, and the brother-in-law of Professor H. Burrow, of the Royal Veterinary College.

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## UNHYGIENIC HANDLING OF MEAT

A complaint of unhygienic handling of meat was heard by the Elgin (Moray) Food Committee (states the *Meat Trades Journal*), the allegation having reference to the bad condition of meat received by an Elgin woman from her butcher.

The Committee decided to send a protest to the Divisional Food Officer regarding the unhygienic methods of handling meat.

Mr. Taylor Forres said if the complaint was justified, it was high time the public health authorities were informed. He had often seen lorries conveying meat to different parts of the area passing through the streets with little or no covering on the carcases.

Mr. J. Dawson, butcher, Elgin, said it was probably no fault of the butcher in question that the meat had been tainted when they took into consideration the way it was distributed.

Mr. P. Nicholson, Elgin, considered that this country was a thousand years behind the times in meat distribution. He could not see why a refrigerator was not installed at the slaughterhouse and the meat carried in closed-in vans.

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## ROYAL COLLEGE OF PHYSICIANS

The Comitia of the Royal College of Physicians has endorsed the unanimous recommendation of its council that the present interests of the College would best be served by remaining in its present premises in Pall Mall East. In coming to this decision the College has had the benefit of the advice of a panel of experts. [Early this year there was considerable correspondence in *The Times* supporting, and opposing, a proposal that the three London royal Colleges—Obstetricians and Gynaecologists, Physicians and Surgeons—should form an academy of medicine in Lincoln's Inn Fields.]

The College has awarded the Moxon Medal to Sir Alexander Fleming for his work on penicillin as an outstanding contribution to therapeutics and clinical medicine.

The Weber-Parkes Prize and medal has been awarded *in absentia* to Dr. Eugene L. Opie, Professor of Pathology, Cornell University, New York, for his work on the pathogenesis of pulmonary tuberculosis; and the Baly Medal has been awarded to Professor S. A. S. Krogh, of the Zoophysiological Laboratory, Copenhagen, Nobel prize winner in physiology and medicine in 1920.

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## INSTITUTE FOR THE STUDY OF ANIMAL BEHAVIOUR

At a meeting of the Council of the Institute for the Study of Animal Behaviour held on October 16th, 1945, at the Zoological Society of London, Dr. E. Hindle, F.R.S., Scientific Director of the Zoological Society, was elected President in succession to Dr. E. S. Russell, who had resigned and who was made an Honorary Member and re-elected a member of Council. The following were also re-elected members of Council:—

R. J. Bartlett, M.SC., A.R.C.S.
J. T. Edwards, D.SC., M.R.C.V.S.
J. W. B. Douglas, B.A., B.SC., B.M., B.CH. (*Hon. Asst. Editor*).
J. M. McC. Fisher, B.A.
J. Hammond, M.A., SC.D., F.R.S.
E. Hindle, M.A., PH.D., SC.D., F.R.S.
J. Huxley, M.A., D.SC., F.R.S.
G. Lapage, M.A., M.D., M.SC.
W. H. Thorpe, M.A., PH.D., SC.D.
A. Walton, B.SC., PH.D.
A. N. Worden, B.A., B.SC., M.R.C.V.S., A.R.I.C. (*Hon. Secretary-Treasurer*).
S. Zuckerman, M.A., D.SC., M.R.C.S., L.R.C.P., F.R.S. (*Hon. Editor*).

Dr. A. Landsborough Thomson, Professor James Gray, F.R.S., Dr. B. W. Tucker and Mr. David Lack were invited to attend to discuss Dr. W. H. Thorpe's proposal that a small field station for work on bird behaviour be initiated under the direction of I.S.A.B. This proposal was welcomed and Dr. Thorpe was entrusted with the preparation of working details of his scheme. The future of publication in Europe of matter relating to Animal Behaviour was discussed also in the light of a communication from Dr. N. Tinbergen of the Zoological Laboratory of the University of Leiden. The Council agreed to support any claims for the financing of work on behaviour among domestic animals, *e.g.*, on grazing behaviour in ruminants and on sexual behaviour in bulls. It was agreed to hold the next scientific meeting early in 1946.

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## PROFESSOR DALLING TO ADDRESS THE FARMERS' CLUB

As intimated in our Notices column, Professor Thos. Dalling, M.A., M.R.C.V.S., will address the Farmers' Club at the Royal Empire Society on Monday next at 2.30 p.m. A discussion will follow his address on "Sterility in Cattle" and the Club extends to members of the N.V.M.A. a cordial invitation to attend.

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## "EVANS" VETERINARY STUDENTSHIPS

The following have been awarded the "Evans" Veterinary Studentships for the best fourth year student at each college, tenable for their fifth year: Mr. F. G. Startup, Royal Veterinary College, Streatley; Mr. G. T. Wilkinson, School of Veterinary Science, University, Liverpool; Mr. J. T. Nicholson, Veterinary College, Dublin; and Mr. R. S. F. Campbell, Veterinary College, Glasgow.

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## GREYHOUND DISEASES RESEARCH

Members of the National Greyhound Racing Society, at a recent meeting in London, instructed the council to take steps to establish a research centre for the study of illnesses and ailments to which racing greyhounds are susceptible, and to provide for this purpose an initial sum of £70,000. It was the Society's intention to encourage young veterinary surgeons to concentrate on this field.

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## THE ROWETT INSTITUTE

Dr. David P. Cuthbertson has been appointed to succeed Sir John Boyd Orr as Director of the Rowett Research Institute, Bucksburn, Aberdeen. At the beginning of the war Dr. Cuthbertson was Grieve Lecturer in Physiological Chemistry at Glasgow University. Later he devoted most of his time to work for the Medical Research Council in connection with planning schemes for the feeding of the occupied countries. He returned only recently from Newfoundland, where he acted as adviser on nutrition to the Government. Like his predecessor, he was trained under Professor E. P. Cathcart at Glasgow. Sir John Orr is now in Canada attending the Quebec conference on food and agriculture.

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## NOBEL AWARDS: PENICILLIN DISCOVERERS HONOURED

The Stockholm correspondent of *The Times*, in a message dated October 25th, reports that the Nobel Prize for Medicine has been awarded jointly to Sir Alexander Fleming, of London University, and Sir Howard Florey and Dr. E. B. Chain, of Oxford University, for the discovery of penicillin and its healing effects. This intimation is followed by the following Reuter message: "The

Karolinska Institute, in awarding the prize, recognises Sir Alexander Fleming as the real discoverer of penicillin, but praises Dr. Chain and Sir Howard Florey for exploiting his discovery by experimenting with its effect on mice. 'Penicillin has rendered humanity one of the greatest services,' the institute adds."

Sir Alexander Fleming, Professor of Bacteriology at St. Mary's Hospital Medical School, London, was born at Lochfield, Darvel, Scotland, in 1881. He discovered penicillin, as he says, "by accident" in his laboratory at St. Mary's Hospital in 1928, and used it not for the treatment of human beings but for the isolation of microbes. Full recognition of his discovery came only during the war, when Sir Howard Florey separated "therapeutic penicillin," the drug now used for treatment, from the original penicillin which contains poisonous substances.

Sir Howard Florey, Professor of Pathology at Oxford University, was born in Australia in 1898, and was a Rhodes Scholar. In 1938, with a team of collaborators, among whom was Dr. Chain, he began to work on penicillin at the Oxford School of Pathology. He later visited the United States and the Soviet Union, to pass on his knowledge. Professor Fleming and Professor Florey were both knighted in 1944.

Dr. Ernst Boris Chain, of University College, Oxford, is University Lecturer and Demonstrator in Chemical Pathology.

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## ADDRESSES OF DISEASE-INFECTED PREMISES

Foot-and-Mouth Disease:

*Essex.*—Conebyes Farm, West Bergholt (Oct. 23rd).

Swine Fever:

*Berks.*—Red House, Lower Earley, Reading (Oct. 23rd); 5, Main Road, Appleford Abingdon (Oct. 24th).

*Cornwall.*—Pencrennys, St. Columb Major (Oct. 29th).

*Essex.*—New Road, Tollesbury, Maldon (Oct. 26th).

*Glos.*—Church Farm, Naunton, Cheltenham (Oct. 24th).

*Hunts.*—Heath Road, Warboys, Huntingdon (Oct. 24th).

*Northants.*—Redshanks Farm and Johnson's Farm, Farcet Fen, Peterborough: Atkinson's Farm, Black Bush, Whittlesey, Peterborough (Oct. 23rd).

*Oxon.*—Steeple Aston, Oxford (Oct. 25th); Home Farm, Bainton, Bicester (Oct. 29th).

*Surrey.*—Broadwell Farm, Wrecclesham Farnham; Linden Farm, Selsdon Vale, Selsdon, Croydon (Oct. 23rd).

*Warwicks.*—Farm Buildings, Canons Ashby, Rugby; 7, Haslucks Green Road, Shirley, Birmingham; Moat Farm, Solihull, Birmingham (Oct. 27th).

*Worcs.*—Bevington Waste, Salford Priors, and Hipton Hill, Evesham (Oct. 24th).

*Yorks.*—Pioneer Farm, Meltham, Huddersfield (Oct. 23rd).

Sheep Scab:

*Cumberland.*—Parkfoot, Howtown, Pooley Bridge, Penrith (Oct. 23rd).

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## INTERNATIONAL BIOLOGICAL STANDARDS

Sir Percival Hartley, Director of Biological Standards, Medical Research Council, delivered the Walter Ernest Dixon Memorial Lecture in the Section of Experimental Medicine and Therapeutics of the Royal Society of Medicine on October 9th. The following report of the lecture is given by the *British Medical Journal*:—

After a tribute to Dixon, one of the earliest advocates of the biological standardisation of drugs, Sir Percival described a biological standard in its simplest form as an arbitrarily chosen but representative sample of the substance for which it was to serve as a basis of measurement, preserved under conditions ensuring its permanence. A unit might be defined as the specific biological activity contained in a certain weight of the standard. The first biological standard to be established was for diphtheria antitoxin, the discovery of which by von Behring was announced in 1890. Then followed Ehrlich's remarkable series of researches, amongst the most famous in immunology, which laid the foundation of biological standardisation as it was known to-day. The supply of standard diphtheria antitoxin from Ehrlich's institute at Frankfurt ceased with the outbreak of war in 1914, and this withdrawal rapidly led to the establishment of the standard on an international basis and to the creation and adoption of international standards for other substances.

In 1921 an international conference in London recommended the adoption of Ehrlich's original unit as the international unit, and in the following year a second international conference in Paris explored the possibility of establishing standards and units for other antitoxins and antisera. As an outcome of this and later conferences international standards for digitalis, pituitary (posterior lobe) extract, insulin, and the arsphenamines were adopted, and a Permanent Commission on Biological Standardisation was set up by the Health Organisation of the League of Nations to provide international standards and units and to secure their widest acceptance. Within less than 25 years 35 international biological standards had been established, and even during the recent war progress had not stopped, for standards for vitamin E (1941), heparin (1942), and penicillin (1944) had been adopted during that period.

### International Achievement

The materials for biological standards had come from many countries, but in all but seven of them the final operations to secure conditions of permanence and stability had been carried out in England, and for all but two of these at the National Institute for Medical Research, Hampstead. Five of the original international serum standards were made at Hampstead, and a number of equivalent international standards had also been made there for the purposes of the Therapeutic Substances Act and the *British Pharmacopoeia*. To illustrate the international character of the work, the lecturer mentioned that material for the serological standards was supplied from England, Denmark, and the United States; the tuberculin standard was made in England; material for the vitamin standards came from Switzerland, Dutch East Indies, Hungary, England, France, Germany, Sweden, and the United States; that for the arsphenamines originally from Germany and the United States and later from England; the first insulin standard was made in England and the second in Canada; the material for both pituitary (posterior lobe) standards was supplied from the United States and manipulated in England; the first digitalis standard was prepared in Holland, the second in England; ouabain standard material was supplied from France; materials for the sex hormones were supplied from eight countries; Canada provided the material for the heparin standard, and the United States and this country the material for penicillin.

Practically all the material for these standards was presented to the international organisation, some of these gifts representing very large sums of money. A laboratory in Switzerland presented 30 grammes of androsterone to provide the replacement standard for male hormone activity; a laboratory in England presented 20 grammes of the purest beta-carotene to provide a replacement standard for vitamin A, and another presented 30 grammes of pure crystalline penicillin sodium salt for the standardisation work in Hampstead. Free distribution was made of all standards issued from Hampstead, on a national basis or to the British Commonwealth or to individual research workers anywhere, as for the international standards.

### Standard for Penicillin

After recounting the course of events which led to the adoption of international standards for vitamins and the subsequent action in this field, Sir Percival Hartley turned to the latest standard, possibly the last, established by the Permanent Commission—namely, the international standard for penicillin. For many reasons, he said, it was desirable that an international standard for penicillin and an international unit defined in terms of it should be agreed and established without delay. Delegates from five countries with expert observers from certain others met in London a year ago under the chairmanship of Sir Henry Dale, and unanimously recommended the adoption of a sample of pure sodium salt of penicillin „II as the international standard, and, for practical reasons which were justified at the time, a sample of a calcium salt of penicillin as the international working standard. The international unit was defined as 0·6 microgramme of the international standard, and such unit was contained in 2·7 microgrammes of the international working standard. Decisions as to nomenclature and other matters were also recorded by the conference.

At Hampstead they were now almost ready for the final stages of giving effect to these decisions by the world-wide distribution of penicillin standards. He exhibited a sample of the international standard, mentioning that at Hampstead they had over 300 such small containers, each holding about 30 milligrammes; also a sample of the international working standard, of which they had 200 containers, each containing about 65 milligrammes. The actual international standard preparations obviously could not be used for the routine assays of penicillin; there were not enough of them; but they were supplied for the assay and periodical check-up of equivalent national standards which the national control centre of each country was expected to prepare.

### The Oxford Unit

The first standard for penicillin was made at Oxford, and the unit of activity, which came to be known as the Oxford unit, was defined as that which was contained in 0·23 milligramme of this preparation. In one way or another the original Oxford unit had been redetermined in many other, more active preparations. At Hampstead they were provided with two such accurately assayed preparations—one containing 71 and the other 84 units per milligramme—and with these the potency of the British standard for

penicillin—155 units per milligramme—was assayed. These three preparations, with two others from the United States carrying the Oxford unit, were included in the samples examined by the London conference a year ago. The results of the assays, despite the different methods employed by the collaborating laboratories, showed remarkably good agreement. There was sound evidence that the value of the unit which was being used a year ago in the United States was the same as the value of the unit being used in this country; from which it certainly seemed that, in spite of the repeated redefinition of the unit in both countries, the original value as defined at Oxford had not been significantly varied. Finally, the value of the unit recommended for international adoption was approximately equivalent to that originally adopted at Oxford.

### Impending Developments

Sir Percival then discussed the important part which international biological standards had played in ensuring the high quality of therapeutic substances. The Therapeutic Substances Act had for nearly 20 years controlled the supply of certain drugs and medicaments, but it was limited in scope and in geographical application. For example, its control did not extend to the vitamins or heart drugs, and its application was restricted to Great Britain and Northern Ireland. A way had been found, however, whereby both these limitations might be overcome—namely, by including all the substances for which international biological standards had been established in the *British Pharmacopoeia*, and the *Pharmacopoeia* on its part had laid down the principle that the standards and units to which pharmacopoeial preparations must conform were the international biological standards and units. In some parts of the British Commonwealth and Empire a control over these substances similar to our own had been established, and in these countries also international standards were in general use.

After describing the interesting replacement operations which had taken place from time to time in respect of 18 of the 35 standards, including the first insulin standard and the first standards for pituitary (posterior lobe) extract and for vitamin B., the lecturer said it was quite likely that a new international organisation which might replace the Permanent Commission of the League of Nations would decide that standards for antisera and some of the antitoxins could be dispensed with, and that arsphenamine—the original "606"—had earned an honourable retirement. The position of vitamin standards might also come under review. As Sir Henry Dale had picturesquely put it, "The ultimate aid of biological standardisation, as of all preventive medicine, may be regarded as self-extinction." But there were new candidates with good claims to admission. The standardisation of the diphtheria prophylactics was a problem of outstanding importance and urgency. The establishment of an international standard for tetanus toxoid for the active immunisation of man might well have an early priority. Some of the investigations carried out at Hampstead regarding the standards for and the assay of gas-gangrene antitoxins, which became urgent and important because of the immediate needs of the war, also indicated new directions in which the work of biological standards might develop.

International biological standards might find useful application in the rapidly developing field of chemotherapy. Pure substances could, as a rule, be fully described in chemical and physical terms, the doses to be administered could be expressed in weight, and biological standards and units were neither necessary nor desirable. It was otherwise, however, in the case of substances of proved biological activity and clinical usefulness of which the chemical composition was unknown, and successive batches of which possibly exhibited varying biological properties. For such substances, in the interim period pending the discovery of their chemical composition and structure, or perhaps of a more reliable process of manufacture, experience had shown the value of the adoption of a standard by comparison with which other preparations could be matched.

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## MINISTRY OF AGRICULTURE NEWS SERVICE

*United Nations Food Conference.*—At a recent Press conference Mr. Noel-Baker, Minister of State, emphasised the importance of the inaugural meeting of the Food and Agriculture Organisation of the United Nations to be held at the Chateau Frontenac in Quebec by invitation of the Canadian Government. The Food and Agriculture Organisation will have the distinction of being the first of the projected United Nations Organisations to start work. The Minister said that it should never be forgotten that 63 per cent. of the world's people live on the land. "If you can make a steady demand for the basic necessities which they produce, if you keep their market stable, then you have gone very far towards stabilising and balancing the whole economic machinery of the world."

The Conference will conduct its business at plenary meetings and it is proposed that there should be two Commissions, one technical and one administrative. Five technical committees have been suggested. These are on (1) Nutrition and Food Management, (2) Agriculture, (3) Forestry, (4) Fisheries, (5) Marketing and Statistics. The Minister of State hopes to lead the United Kingdom Delegation. Mr. Broadley, Second Secretary of the Ministry of Food, and Mr. R. R. Enfield, Principal Assistant Secretary of the Ministry of Agriculture and Fisheries, will be the chief United Kingdom delegates in regard to food and agriculture respectively. Professor Rae, Ministry of Agriculture and Fisheries, will have special responsibilities on behalf of the Agricultural Research Council and the Agricultural Departments in relation to any proposals affecting agricultural research; also in relation to any proposals affecting the work of the Imperial Agricultural Bureaux.

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*Surrey Survey of Dairy Herds.*—A high standard is set by the Surrey War Agricultural Executive Committee when a livestock survey is carried out for the purpose of assessing the general efficiency of the county's dairy herds. Information is collected under eleven different headings, each one of which has a direct bearing upon the actual value of the herds in milk production. Some of these headings are breeding policy, disease control, herd recording and management, herd average and the type of bull used. As to the bull, information is required as to whether it is pedigree and of the same breed as the herd majority or as determined by the breeding policy. If the animal is non-pedigree, is it from recorded parents? Is the bull merely "just suitable" or even unsuitable? Points are allotted under each of the eleven headings, the total of which determine whether a herd is A, B or C. With difficulties of feeding, especially last winter when feeding-stuffs were at a low level, it was no easy matter for a farmer to raise the category of his herd. Nevertheless, the third survey that has just been completed, involving 1,012 herds, shows that 362 Surrey herds have been placed in a higher category. It is more than probable that not a little of the credit for this result is due to the steady increase in milk recording that is taking place in Surrey. Before the war only 152 farmers in the county kept milk records of individual cows and it is possible that out of this number quite a few only kept records "for interest" and did not feed according to yield. By 1943 there were 303 farmers keeping milk records and feeding each cow accordingly. To-day the number is 417 and is still on the increase.

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## "SYNTHETIC SEX HORMONES"

The report of the Committee on Diseases of Dairy Cattle to the A.V.M.A. Executive Session states: "Synthetic sex hormones are not the answer to the farmer's prayer for more dairy calves and more milk production. Although injection of these hormones has caused virgin heifers to start giving milk and has prolonged the reproductive ability of farm animals, they have often been overrated. Their use is surrounded with many dangers unless safeguarded by veterinary supervision.

"In their endeavour to supply the increased demand for milk many farmers are robbing their new-born calves of feeding elements needed to give them a good start in life.

"Nature intended that the calves should get all the colostrum because it is ten times as rich in protective substances as normal milk. Unfortunately, the dairyman has interfered with nature to such an extent that few calves get enough colostrum to meet their needs. It becomes necessary to feed vatimins in concentrated form. Vitamin A deficiency in a calf causes watery eyes, a cough, pneumonia and scours. Vitamin B deficiency leads to flabby muscles and digestive stagnation. Vitamin C is needed for the proper function of the guard cells in the intestine and vitamin D helps to prevent rickets."

The committee also warned against farmers looking upon udder injections as a panacea in controlling mastitis. Sanitation and proper milking practices are equally as important in combating this disease.

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Even when separation from the armed forces is effected, immediate launching into practice or food inspection or teaching or research or commercial lines or other veterinary activity may not be the wisest course for most veterans. The educational privileges afforded by the "G.I." Bill should be considered carefully. A year of graduate work, and a longer period for those who were under 25 years of age when they entered the military service, is almost certain to pay valuable dividends in achievement throughout the remainder of any veterinarian's career. Even a quickie (refresher course) may justify delay of the serious business of locating.—*Vet. Med.* (Chicago).